

and gallium, and a first cladding layer and a second cladding layer for sandwiching the active layer therebetween, wherein

the active layer forms an oscillating section of the semiconductor laser device and consists of two to four quantum well layers and one to three barrier layers each interposed between the quantum well layers, and one or more of the barrier layers has a layer thickness of 4 nm or less.

(3) ²³27. The gallium nitride semiconductor laser device according to claim 26, wherein each of the quantum well layers has electrons and holes uniformly distributed therein.

²⁴28. The gallium nitride semiconductor laser device according to claim 26, wherein each quantum well layer has a layer thickness of 10 nm or less.

²⁵29. The gallium nitride semiconductor laser device according to claim 26, wherein said nitride semiconductor forming said active layer consists essentially of nitrogen, indium and gallium.

²⁶30. The gallium nitride semiconductor laser device according to claim 26, wherein the semiconductor laser device is a self-oscillating semiconductor laser device.

²⁷31. The gallium nitride semiconductor laser device according to claim 26, further comprising a driving circuit for injecting an electric current into the semiconductor laser device.

²⁸32. The gallium nitride semiconductor laser device according to Claim 31, wherein the electric current is a modulated current and a modulation frequency of the current is 300 MHz or more.

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33. The gallium nitride semiconductor laser device according to claim 26, wherein said laser device generates a modulated optical output when an electric current is injected into said laser device.

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34. (New) A gallium nitride semiconductor laser device having emission wavelengths within a band corresponding to ultraviolet to green, comprising a semiconductor substrate, an active layer having a quantum well structure and made of a nitride semiconductor containing at least indium and gallium, and a first cladding layer and a second cladding layer for sandwiching the active layer therebetween, wherein

the active layer forms an oscillating section of the semiconductor laser device and consists of two to four quantum well layers and one to three barrier layers each interposed between the quantum well layers, and wherein one of the first and second cladding layers is a p-type cladding layer, and the p-type cladding layer has a ridge portion and a planar portion on opposite sides of the ridge portion.

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35. The gallium nitride semiconductor laser device according to claim ³⁰34, wherein the ridge has a width of about 1 μm to 5 μm .

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36. The gallium nitride semiconductor laser device according to claim ³⁰34, wherein said planar portion has a film thickness of 0.05 μm to 0.5 μm .